

WHAT IS CLAIMED IS:

1. A router for interconnecting external devices coupled to said router, said router comprising:

a switch fabric; and

a plurality of routing nodes coupled to said switch fabric, wherein each of said plurality of routing nodes comprises packet processing circuitry capable of transmitting data packets to, and receiving data packets from, said external devices and further capable of transmitting data packets to, and receiving data packets from, other ones of said plurality of routing nodes via said switch fabric, wherein said packet processing circuitry comprises:

a first network processor comprising a first plurality of microengines, each of said first plurality of microengines capable of performing security and classification functions associated with said data packets; and

a second network processor comprising a second plurality of microengines, each of said second plurality of microengines capable of performing security and classification functions associated with said data packets.

2. The router as set forth in Claim 1 wherein said security and classification functions comprise replacing a source address associated with header information of a first data packet with an address selected from a pool of router addresses associated with said router.

3. The router as set forth in Claim 1 wherein said security and classification functions comprise filtering a first data packet based on at least one of: 1) a Layer 2 address associated with said first data packet; 2) a Layer 3 address associated with said first data packet; and 3) a traffic type associated with said first data packet.

4. The router as set forth in Claim 1 wherein said security and classification functions comprise filtering a first data packet based on at least one of: 1) a Layer 4 address associated with said first data packet; and 2) a class of service (CoS) value associated with said first data packet.

5. The router as set forth in Claim 1 wherein said security and classification functions comprise performing a Network Address Translation (NAT) function to provide subnet independence.

6. The router as set forth in Claim 1 wherein a first one of said first plurality of microengines is capable of executing N threads, wherein each of said N threads performs at least one security and classification function.

7. The router as set forth in Claim 6 wherein a first one of said second plurality of microengines is capable of executing M threads, wherein each of said M threads performs at least one security and classification function.

8. The router as set forth in Claim 7 wherein said first network processor processes data packets being transmitted from said external devices to said switch fabric.

9. The router as set forth in Claim 8 wherein said second network processor processes data packets being transmitted from said switch fabric to said external devices.

10. A communication network comprising a plurality of routers that communicate data packets to one another and to interfacing external devices, each of said plurality of routers comprising:

a switch fabric; and

a plurality of routing nodes coupled to said switch fabric, wherein each of said plurality of routing nodes comprises packet processing circuitry capable of transmitting data packets to, and receiving data packets from, said external devices and further capable of transmitting data packets to, and receiving data packets from, other ones of said plurality of routing nodes via said switch fabric, wherein said packet processing circuitry comprises:

a first network processor comprising a first plurality of microengines, each of said first plurality of microengines capable of performing security and classification functions associated with said data packets; and

a second network processor comprising a second plurality of microengines, each of said second plurality of microengines capable of performing security and classification functions associated with said data packets.

11. The communication network as set forth in Claim 10 wherein said security and classification functions comprise replacing a source address associated with header information of a first data packet with an address selected from a pool of router addresses associated with said router.

12. The communication network as set forth in Claim 10 wherein said security and classification functions comprise filtering a first data packet based on at least one of: 1) a Layer 2 address associated with said first data packet; 2) a Layer 3 address associated with said first data packet; and 3) a traffic type associated with said first data packet.

13. The communication network as set forth in Claim 10 wherein said security and classification functions comprise filtering a first data packet based on at least one of: 1) a Layer 4 address associated with said first data packet; and 2) a class of service (CoS) value associated with said first data packet.

14. The communication network as set forth in Claim 10 wherein said security and classification functions comprise performing a Network Address Translation (NAT) function to provide

subnet independence.

15. The communication network as set forth in Claim 10 wherein a first one of said first plurality of microengines is capable of executing N threads, wherein each of said N threads performs at least one security and classification function.

16. The communication network as set forth in Claim 15 wherein a first one of said second plurality of microengines is capable of executing M threads, wherein each of said M threads performs at least one security and classification function.

17. The communication network as set forth in Claim 16 wherein said first network processor processes data packets being transmitted from said external devices to said switch fabric.

18. The communication network as set forth in Claim 17 wherein said second network processor processes data packets being transmitted from said switch fabric to said external devices.

19. For use in a router comprising a switch fabric and a plurality of routing nodes coupled to the switch fabric, each of the routing nodes capable of transmitting data packets to, and receiving data packets from, external devices and transmitting data packets to, and receiving data packets from, other routing nodes via the switch fabric, a method of performing security and classification functions comprising the steps of:

performing security and classification functions in a first network processor comprising a first plurality of microengines, each of said first plurality of microengines capable of executing said security and classification functions; and

performing security and classification functions in a second network processor comprising a second plurality of microengines, each of the second plurality of microengines capable of executing the security and classification functions.

20. The method as set forth in Claim 19 wherein the security and classification functions comprise replacing a source address associated with header information of a first data packet with an address selected from a pool of router addresses associated with the router.

21. The method as set forth in Claim 19 wherein the security and classification functions comprise filtering a first data packet based on at least one of: 1) a Layer 2 address associated with the first data packet; 2) a Layer 3 address associated with the first data packet; and 3) a traffic type associated with the first data packet.

22. The method as set forth in Claim 19 wherein the security and classification functions comprise filtering a first data packet based on at least one of: 1) a Layer 4 address associated with the first data packet; and 2) a class of service (CoS) value associated with the first data packet.

23. The method as set forth in Claim 19 wherein the security and classification functions comprise performing a Network Address Translation (NAT) function to provide subnet independence.